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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)
ISOZAKI et al) Examiner: Thexton, Matthew
Serial No. 09/880,781)
Filed: June 15, 2001) Group Art Unit: 1714
For: PROCESS FOR THE)
PREPARATION OF POWDER)
COATING COMPOSITION)

DECLARATION UNDER 37 C.F.R. 1.132

I, Masahiro KUROKAWA, hereby declare as follows:

1. I am a citizen of Japan residing at 356-10, Kitayana, Hadano-shi, Kanagawa prefecture, Japan.
2. I am one of the co-inventors of the invention described and claimed in the captioned U. S. patent application. I am familiar with the specification as filed with the captioned application and with the sole reference cited by the Examiner as prior art against the captioned application.
3. I obtained a degree of Doctor of Philosophy from Osaka City University, Faculty of Engineering, Department of Chemical Engineering in 1980 and joined Mitsubishi Gas Chemical Company, Inc. in the same year. During the employment with Mitsubishi Gas Chemical Company, Inc., I have been mainly engaged in research and development of polymers.
4. I have personal knowledge of the following tests which were performed under my supervision.

Experiment 1

In a reactor equipped with a thermometer, a stirrer, a reflux condenser, a pressure controller using nitrogen gas and a bottom discharging conduit, 67 parts of methanol were charged and heated to 80°C, to which were gradually added 40 parts of methyl methacrylate, 30 parts of glycidyl methacrylate, 15 parts of styrene, 15 parts of n-butyl acrylate and 5 parts of 2,2'-azobis(2,4-dimethylvaleronitrile) with stirring through 4 hours while maintaining the mixture at 80°C. The reaction mixture was further maintained at that temperature for 6 hours to obtain a resin solution. Thereafter, 25 parts of dodecane dicarboxylic acid, 0.6 part of benzoin and 0.6 part of a leveling agent (Modaflow; manufactured by Monsanto Inc.) were added to the resin solution and the blend was stirred for 2 hours to obtain a uniform mixture. This mixture was charged in an extruder provided with a plurality of bent ports and extruded into strands and pelletized. The pellets were ground and sieved to obtain a powder coating composition. The powder coating composition was measured for a non-volatile matter content and tested for anti-blocking property according to the method described in Example 1 of the specification of the captioned application. The powder coating composition was applied to a steel plate previously treated with zinc phosphate by electrostatic coating and then cured at 180°C for 20 minutes in an oven to form a resin coat thereover. The resin coat thus formed was tested for surface smoothness and gloss thereof according to the methods described in Example 1 of the specification of the captioned application. The results are summarized in Table I below.

Comparative Experiments 4 and 5

Experiment 1 was repeated in the same manner as described above except that 1-butanol (Comparative

Experiment 4) or a mixture of toluene and 1-butanol (a mixing ratio: 7/3) (Comparative Experiment 5) was used in place of methanol. The results are shown in Table I below.

Table I

Experiment No.	1	Comparative Experiment 4	Comparative Experiment 5
Solvent used	methanol	1-butanol	toluene/1-butanol (7:3)
Non-volatile Matter Content (wt. %)	99.1	97.6	95.9
Anti-blocking Property	A	B	C
Surface Smoothness	A	B	C
Gloss (at 60°)	93	89	88

5. Conclusion

The process according to the present invention (Experiment 1) in which methanol is used as a solvent in the polymerization stage can easily afford a powder coating composition containing a glycidyl or methylglycidyl group-containing polymer and having a low concentration of volatile matters and good anti-blocking property. Further, the powder coating composition can provide a coat having a smooth surface and a high gloss.

In contrast, when 1-butanol and a mixture of toluene and 1-butanol (a mixing ratio: 7:3) is used in place of the methanol (Comparative Experiments 4 and 5), the concentration of volatile matters and anti-blocking property of the resulting coating compositions are inferior to those of Experiment 1. Further, the coats obtained with the powder coating compositions of Comparative Experiments 4 and 5 are also inferior to those

of Experiment 1 with respect to surface smoothness and gloss.

6. I further declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated This 10th Day of January, 2004

Masahiro Kurokawa
Masahiro KUROKAWA